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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/884,451	06/19/2001	Robert Dolan	101361-0043	1957

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EXAMINER	
MALDONADO, JULIO J	

ART UNIT	PAPER NUMBER
2823	

DATE MAILED: 05/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Offic Action Summary	Application No. 09/884,451	Applicant(s) DOLAN ET AL.	
	Examin r Julio J. Maldonado	Art Unit 2823	

-- The MAILING DATE of this communication appears on the cover sh et with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,6-13 and 20-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *10 and 11* is/are allowed.

6)☒ Claim(s) *1,6-9,12,13 and 20-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. The cancellation of claims 2-5 and 14-19 is acknowledged.

Allowable Subject Matter

2. The indicated allowability of claims 12 and 13 is withdrawn in view of the newly discovered reference(s) to Dolan et al. (U.S. 6,248,642 B1). Rejections based on the newly cited reference(s) follow.

Continued Examination Under 37 CFR 1.114

3. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01/07/2004 has been entered.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 6-9 and 20-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakaguchi et al. (U.S. 6,313,014 B1) in view of Ogura et al. (U.S. 6,506,662 B2).

In reference to claims 1 and 20-25, Sakaguchi et al. (Fig.1-5) in a related method to form buried oxide films teach placing the substrate (23) into a vacuum chamber, the substrate being treated with a background fluid other than molecular oxygen, said fluid comprising hydrogen and said hydrogen is a surface inhibiting agent; evacuating the vacuum chamber to a first pressure; and implanting ions into the substrate (23) to form a buried oxide layer under a top silicon layer (22), where the fluid inhibits formations of threading dislocations in the top silicon layer (22) for reducing a defect density of the processed substrate; and selecting the fluid from fluids that inhibit formations of threading dislocations in the top silicon layer (22) for reducing a defect density of the processed substrate (23) (column 2, line 53 – column 16, line 25).

Sakaguchi et al. fail to teach introducing a fluid other than molecular oxygen in a vacuum chamber as a background fluid.

However, Ogura et al. (Figs.1C-3) in a related method to form a buried oxide layer by ion irradiation teach dissociating water molecules (H_2O) in a plasma chamber to obtain positive ions; and introducing said ions into a reaction chamber where the substrate to be implanted is provided therein, wherein said ions include oxygen ions and a fluid other than oxygen comprising hydrogen (column 3,lines 60 – 65, column 4, lines 1 – 4, column 8, line 61 – column 9, line 2 and column 9, lines 54 – 62). Furthermore, Ogura et al. teach that the introduction of said oxygen ions and said fluid occurs before said implantation of said oxygen ions. Therefore, Ogura et al. teach introducing a fluid other than molecular oxygen into the reaction chamber; and subsequently, implanting ions into the substrate, in the presence of the background fluid. It would have been

within the scope of one of ordinary skill in the art to combine the teachings of Sakaguchi et al. and Ogura et al. to enable the implantation step of Sakaguchi et al. to be performed according to the teachings of Ogura et al. because one of ordinary skill in the art at the time the invention was made would have been motivated to look to alternative suitable methods of performing the disclosed implantation step of Sakaguchi et al. and art recognized suitability for an intended purpose has been recognized to be motivation to combine. MPEP 2144.07.

In reference to claims 6 and 7, Sakaguchi et al. in combination with Ogura et al. substantially teach all aspects of the invention but fail to teach the first pressure is less than about $1x10^{-5}$ Torr and a second pressure less than about $1x10^{-3}$. However, the examiner takes official notice that the selection of the claimed ranges is obvious because it is a matter of determining optimum process condition by routine experimentation with a limited number of species.

In reference to claims 8 and 9, Sakaguchi et al. in combination with Ogura et al. teach controlling the amount of fluid introduced into the vacuum chamber based upon a parameter measured in the chamber, said parameter consisting from the group consisting of ion concentration and temperature (column 2, line 53 – column 16, line 25).

Allowable Subject Matter

6. Claims 10 and 11 are allowed.

7. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record neither teaches nor suggests the step of actively

controlling the amount of fluid introduced into the vacuum chamber based upon a measurement of an ion beam current.

Response to Arguments

8. Applicant's arguments filed 01/07/2004 have been fully considered but they are not persuasive.

Applicants argue, "... Ogura fails to bridge the gap in the teachings of Sakaguchi to render the claimed inventions obvious....Ogura, describes a method of generating a silicon-on-insulator substrate by utilizing an apparatus that includes a plasma chamber in which plasma dissociation of selected gas molecule is utilized to generate ions, and further includes a separate reaction chamber in which a silicon substrate is exposed to ions, which were extracted form the plasma chamber...". In response to this argument, as mentioned above, one of ordinary skill in the art at the time the invention was made would have been motivated to look to alternative suitable methods of performing the disclosed implantation step of Sakaguchi et al. and art recognized suitability for an intended purpose has been recognized to be motivation to combine. MPEP 2144.07.

Also, applicants argue, "... Ogura does not teach introducing a fluid other than molecular oxygen into the reaction chamber prior to implanting ions in the silicon substrate...Such contaminant ions form part of the ion beam bombarding the substrate, and not a background fluid that is distinct from the ion beam. In addition, these contaminant ions are introduced into the reaction chamber at the same time as the oxygen ions, and not prior to implantation of the oxygen ions into the substrate....". In response to these arguments, the ionized gases in Ogura et al. have to be introduced

first into the reaction chamber before the oxygen ions are implanted in the substrate. Therefore, Ogura et al. teach introducing a fluid other than molecular oxygen in the reaction chamber and subsequently implanting the oxygen into the substrate. The plasma would no occur in the absence of these gases. Furthermore, there is no description in the rejected claims that the fluid other than oxygen has to be different from the ion beam. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Conclusion

9. Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is 571-272-2800. See MPEP 203.08.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Julio J. Maldonado whose telephone number is (571) 272-1864. The examiner can normally be reached on Monday through Friday.

11. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri, can be reached on (571) 272-1855. The fax number for this group is 703-872-9306 for before final submissions, 703-872-9306 for after final submissions and the customer service number for group 2800 is (703) 306-3329. Updates can be found at http://www.uspto.gov/web/info/2800.htm.

Julio J. Maldonado
Patent Examiner
Art Unit 2823

Julio J. Maldonado
May 8, 2004

George Fourson
Primary Examiner